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ABSTRACT

The Sapir-Whorf Hypothesis, long considered a factor in intercultural communication, is discussed. Empirical studies that have tended to validate the hypothesis are reviewed, and the hypothesis is then considered from the standpoint of empirical and scientific research requirements. It is shown that the hypothesis has never been formally defined for testing, and therefore does not exist as a scientifically testable thesis. As a result, all studies that have attempted to interpret empirical data accorded to the hypothesis are either flawed or invalid because they have tested something other than the hypothesis. It is concluded that the Sapir-Whorf Hypothesis exists only as a notion, and has no meaningful relation to intercultural communication. Includes an abstract in Japanese. Contains 22 references. (Author/MSE)

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LINGUISTIC DETERMINISM AND MUTABILITY: THE SAPIR-WHORF "HYPOTHESIS" AND INTERCULTURAL COMMUNICATION

BY GENE VAN TROYER

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Articles

Linguistic Determinism and Mutability: The Sapir-Whorf "Hypothesis" and Intercultural Communication

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This paper discusses the so-called "Sapir-Whorf Hypothesis," which has long been considered a factor in intercultural communication. It briefly discusses empirical studies which have tended to validate the hypothesis, and then considers the hypothesis from the standpoint of scientific and empirical research requirements. It is shown that the hypothesis has never been formally defined for testing, and that it therefore does not exist as a scientifically testable thesis. As a result, all studies which have attempted to interpret empirical data according to the hypothesis are either flawed or invalid because they have tested something other than the hypothesis. It is concluded that the Sapir-Whorf "Hypothesis" exists only as a notion, and has no meaningful relation to intercultural communication.

言語決定論と可変性：
サピア＝ウォーフの「仮説」と異文化コミュニケーション

この論文は、長い間、異文化コミュニケーションの要素であると考えられてきたサピア＝ウォーフの「仮説」について論じる。初めにこの仮説の妥当性を証明してきた実証的研究について検討し、次に科学的実証的研究の必要条件という見地からこの仮説を検証する。そこでは、この仮説が検証可能なほどきちんと定義されたことが未だかつてなかったこと、したがって科学的検証の可能な命題としては存在していないことが示される。その結果、この仮説に基づいて実証的なデータを解釈しようとした過去のすべての研究は、仮説ではない何物かを検証しようとしたという点において、欠陥があったか無効であったということになる。結論として、サピア＝ウォーフの「仮説」はたんなる意見でしかなく、異文化コミュニケーションにはいかなる意味ある関係も持たないという主張がなされる。

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> An experimental subject who puts on goggles with inverting lenses initially sees the entire world upside-down. At the start his perceptual apparatus functions as it had been trained to function in the absence of the goggles, and the result is extreme disorientation, an acute personal crisis. But after the subject has begun to learn to deal with his new world, his entire visual field flips over, usually after an intervening period in which vision is simply confused. Thereafter, objects are again seen as they had been before the goggles were put on. The assimilation of a previously anomalous visual field has reacted upon and changed the field itself. Literally as well as metaphorically, the man accustomed to inverting lenses has undergone a revolutionary transformation of vision. (Kuhn, 1970, p. 112)[1]
>
> —Thomas S. Kuhn
> The Structure of Scientific Revolutions

The question concerns linguistic determinism and a hypothesis proposed more than 50 years ago by Edward Sapir, now known as the Sapir-Whorf Hypothesis. That question is: To what extent is intercultural communication influenced by the linguistic phenomena that are central to the Sapir-Whorf Hypothesis? A conclusive answer to this question will probably never be forth-coming; the question demands a quantitative assessment, and communication and understanding are qualitative in nature, beyond exact measure. Theirs are the qualities of dynamism, and as Werner Heisenberg showed us in the 1920s, the measurements of a dynamic system cannot be determined with 100% certainty; by focusing on one or an other aspect of a dynamic system, we lose clear sight of all the other aspects. In other words, a certain degree of indeterminism is always a feature of any observation of processes in nature.

Sapir, and subsequently his student Benjamin Lee Whorf, essentially posited that language acted as a mold for thought, forcing human thinking into *a priori* linguistic categories. Hence such notions as "linguistic relativism" or linguistic determinism can be applied to the Sapir-Whorf Hypothesis with some justification, for what it attempts to establish is that the way we perceive the world is predetermined by the structure of the language we happen to speak. Controversy has surrounded the proposal since its inception, with most of the argumentation being of the "Free Will vs. Determinism" variety. While these arguments are stimulating, they are only peripherally concerned with the main focus of this paper and will not be touched upon. This paper will primarily focus upon a few of the empirical studies that appear to have bearing upon the topic.

This paper is an attempt at synthesis rather than original research. The truth of this particular matter lies somewhere between its two extremes, and it is the author's hope to sketch some outline of the shape of this truth. Quite enough original research exists already to make this kind of assessment possible as well as desirable.

The Sapir-Whorf Hypothesis

Language is a code that all members of a specific language group learn and share, and through which a significant amount of what is known about the world is learned. So powerful is language as a force in our lives that it is only natural that we should come to regard it as fundamental to the way we perceive reality. As Sapir stated:

> Human beings do not live in the objective world alone, nor alone in the world of social activity as ordinarily understood, but are very much at the mercy of the particular language which has become the medium of expression for their society. It is quite an illusion to imagine that one adjusts to reality essentially without the use of language and that language is merely an incidental means of solving specific problems of communication or reflection. The fact of the matter is that the "real world" is to a large extent unconsciously built upon the language habits of the group .... (Sapir, 1949, p. 209)

In Sapir's view, the language habits of the individual's community effectively condition the perception of experience and the choices made in interpreting that experience. Whorf further refined this observation. Reality, Whorf said,

> .... is presented in a kaleidoscopic flux of impressions which has to be organized by our minds—and this means largely by the linguistic systems in our minds. We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way—an agreement that holds throughout our speech community and is codified in the patterns of our language. (in Hall, 1974, p. 143)

What Whorf iterated was that the grammatical structure of a language subtly and profoundly shaped the structure which the mind imposed upon reality. These two views as expressed by Sapir and Whorf are the central elements in what has come to be called the Sapir-Whorf Hypothesis.

It is neither strange nor surprising that this hypothesis should be so readily applicable to intercultural communication. The hypothesis was an outgrowth of the Structuralist school of linguistics, which held as a basic tenet that meaning in language was primarily a result of structure (Pearson, 1977, p. 71)—an idea not far removed from those stated above. Structural linguistics itself was an outgrowth of the needs encountered by anthropologists for an objective means to classify the phonetic structures of non-Indo-European languages, particularly the languages of native American Indians. One of the progenitors of this school, the anthropologist Franz Boas (the founder of American anthropology), believed that cultural traditions were the forces that shaped people's lives, and he realized that attempts to understand a people's culture without a knowledge of their language would avail little in the way of useful knowledge. Edward Sapir was one of Boas's students, and his work was in many ways a continuation of his teacher's. Cultural implications are implicit in the anthropologically-oriented linguistic studies done by Sapir, as well as by his own student, Whorf, and the hypothesis presently under consideration is perhaps the most prominent of these.

Within the Sapir-Whorf framework, language is basically a set of structured sound signs that communicate thought and feeling. All languages have certain universals to deal with, primarily space, time, quantity, action, state, and so forth. It was Whorf who set out to prove that these functions create special modes or categories of thought, and it is his work that helped to establish partial validity for the hypothesis that bears his and his teacher's names.

Empirical Studies

For any theory to stand, it must establish a concrete base in the observable world. A number of studies have been conducted which tend to validate the Sapir-Whorf Hypothesis, and many miscellaneous papers and observations as well have contributed some substantive evidence to the argument that language inevitably shapes the human perception of reality. The evidence concerns both the structural aspects of language, and the linguistic-cultural influence exerted on perception.

Whorf's evidence was linguistic. Through his study of the Hopi Indian language, Whorf arrived at a contrastive statement concerning both Hopi and what he termed Standard Average European (SAE) languages. SAE languages, he claimed, tended to break reality down in terms of *things* (tangible objects) and *non-things*. In other words, the SAE language is binomial in the way it breaks existence down into *is* and *is not* categories.

whereas Hopi divides reality in terms of events that are seen objectively or subjectively; that is, physically real events are expressed as outlines, movements and so forth, while subjective or physically intangible events are expressed in terms of "invisible intensity factors." This is quite unlike the SAE language, which gives equal status to the real or the imaginary. Furthermore, Whorf found a striking difference in views of *time* related to the differences in the structures the Hopi and SAE languages. Time as expressed in Hopi is holistic and flowing like a river unbroken, while in SAE it is discrete and categorized like a clock face, with no connection between one moment and the next (Whorf, 1974, p. 77).

A similar analysis of Navaho was conducted by Hoijer (1954). He found that the structure of the Navaho language led one to speak of "actors" and "goals" not as performers or receivers of actions, as would be the case in a language like English, but as actors linked to actions which had already been defined in part as pertaining to specific classes of beings. The form which in English would be *You have lain down,* would in Navaho be expressed as *You [belong to, equal one of] a class of animate beings which has moved to rest.* A second form, which in English would be expressed as *You have laid, put me down,* should be glossed in Navaho as *You, as agent, have set a class of animate beings, to which I belong, in motion to a given point.* According to Hoijer (1954), this very same aspect in the structure of the Navaho language is as well evident in the Navaho religious orientation. Just as the Navaho sees himself as adjusting to a universe that is given or connected to its events, so in his manner of speaking does he connect people to actions and movements—in other words, it is not that one *does* an action, but that one *is* the action.

Other experiments stimulated by the Sapir-Whorf thesis have also tended to lend support to the thesis. One such, conducted by Brown and Lenneberg, tested the relationship between the accessibility of linguistic terms and the psychological process of recognition. Using only the English language, the two researchers did indeed show that there is a relationship between language and the storage of information in the brain. What was basically established was that it is easier to remember something if there is a word for it (in Price-Williams, 1966, pp. 396-416). This seems obvious. Certainly every language user knows that the word *stone* is easier to both recall and communicate than a round-about description like "small ellipsoid composed of minerals and formed through sedimentation, great heat, or great chthonic pressures."

Another experiment by Chapman and Kowieski (1975) addressed a similar question: To what extent will first language learning effect the organization of verbal data in free recall? By analyzing data obtained

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from native speakers of Chinese and native speakers of English, these researchers felt that they had established "linguistic relativism" in the Whorfian sense: by giving the Chinese speakers a list of words in Chinese and providing the English speakers with a list of words having equivalent meanings in English, they determined that the Chinese speakers showed a higher frequency of correct recall that did the English speakers, which "indicated that a linguistic relativity factor was indeed operative in the organization of the recall protocols" (p. 16).

In contrast to these studies, however, Malotki (1983), in a thoroughgoing study, demonstrated that Hopi has a richer system of expressions for time than Whorf accounted for in his earlier research into the language. This system, according to Malotki, is based on forms whose basic references are spatial; that is, they divide time and the physical world into sequential categories with just as much complexity as any SAE language. Another researcher, Comri (1985), asserted that Malotki's revelations stand as a complete refutation of Whorf's ideas of the Hopi world view as expressed in the structure their language; simply put, Whorf did not understand enough about Hopi to make the categorical conclusions at which he arrived. With regard to this, McNeill (1987) observed that, "Nevertheless, such temporal metaphors in themselves do not seem inconsistent with a world view in which time is cyclic and things in the world 'eventuate'" (p. 176), an empirically unsupported assumption that characterizes much thought intended to support the Whorfian "hypothesis."

In a consideration of the differences between Chinese and English syntactic structures with regard to counterfactual (or subjunctive) clauses, Scovel (1991) summarized research by Bloom (1981) that indicated English speakers, because of the structure of their language, were better able to ascertain the truth or falsity of a statement than Chinese speakers; as well as research by Au (1983) and Liu (1985), which demonstrated that Bloom's test materials (translations from English to Chinese) were faulty. As Scovel notes, this kind of research is "... Representative of the several experiments which have been conducted on syntactic differences between languages and their potential Whorfian influence ..." (1991, p. 50). As Scovel further notes, in over forty years of experimental research into the question of linguistic relativity, no study has ever succeeded in establishing its existence. He writes:

> The experimental evidence is abundantly clear—differences among linguistic structures apparently do not affect the cognitive and perceptual processing of speakers of the different languages under investigation. (1991, p. 51)

The Non-Deterministic Viewpoint

Does language truly have such an overpowering affect on human consciousness? Is it as "tyrannical" as Sapir rather flamboyantly says it is? The empirical evidence cited previously clearly indicates that neither is the case.

Other investigators, in order to address such questions, have looked deeper, beyond the structure of language and into the structure of the brain. Most of them agree that the observed linguistic data indicates that some fundamental organizing principle is at work in the way human beings see the world, but that this does not mean language is *a priori* the cause of the patterning process (Piaget, 1970; Chomsky, 1975). In *Genetic Epistemology*, the psychologist Jean Piaget contends that the processes which pattern human perception are visible in children at the pre-linguistic stage of development, which means that a non-linguistically-based process of organization is at work in the human brain (1970). Noam Chomsky, in *Language and Mind*, writes that possessing a human language is associated with a specific kind of mental organization—an initial, innate structure that can be attributed to the mind (1972, pp. 88-89), and which Chomsky sometimes refers to as Universal Grammar (UG). Clearly both investigators feel that there is something more fundamental going on than just the surface appearance of language. If their hypotheses have any credence, they would tend to obviate the theoretical assumptions of the Sapir-Whorf Hypothesis.

It is Piaget's (1970) observation that at about the end of the first year of life or the beginning of the second year, the infant develops a sensory-motor intelligence with it's own logic, a logic of action, which he says consists of patterns or "schemes" of behavior, meaning behavior which is repeatable. The process for arriving at this practical concept is the same as that which gives rise to more complex concepts at much later stages of development. The pre-linguistic child learns to coordinate these schemes into a kind of sensory motor intelligence which is the foundation for all mathematical-logical structures.[2] This practical, sensory-motor intelligence is not at the level of thought, but it allows the child to act in space with some sort of orderly competence. Between about the age of 1.5 to 7 or 8 years, the practical logic of sensory-motor intelligence is internalized, taking shape in thought at the level of representation.

Language, Piaget maintains, is but one form of representation. Another is semiotic function, which is the ability to represent something by a sign or a symbol or another object. That language is but one among many aspects of the semiotic functions, albeit an immensely important one, would appear to be confirmed by the work of Hans Furth, detailed

in his book *Thinking Without Language*. In this study Furth found well-developed logical thinking in deaf-mute children long before they had developed in terms of language abilities. In other words, they think without language as we are accustomed to understanding it (in Piaget, 1970, p. 46). Finally, Piaget notes about the eventual appearance of language that until the sensory-motor intelligence is more-or-less achieved, language does not appear in children .

Chomsky similarly proposes that pre-linguistic intellectual structures are at the foundation of logic and language, though unlike Piaget he speculates that language may be based on an inherited UG. The UG that Chomsky describes bears many similarities to the "sensory-motor intelligence" discussed by Piaget (1970). As Chomsky remarks:

> The tasks of the psychologist, then, divide into several subtasks. The first is to discover the innate schema that characterizes the class of potential languages ... The second subtask is the detailed study of the actual character of the stimulation and the organism-environment interaction that sets the innate cognitive mechanism into operation ... It is not unlikely that detailed investigation of this sort will show that the conception of universal grammar as an innate schematism is only valid as a first approximation; that, in fact, an innate schematism of a more general sort permits the formulation of tentative "grammars" which themselves determine how later evidence is to be interpreted ... (1972, pp. 88-89).

In the frame of reference adopted by both Piaget and Chomsky, the Sapir-Whorf orientation is quite backwards: language does not predispose the mind to think in *a priori* categories; rather, pre-existent structures at the biological level in the brain are the shapers of language and of reality in general, and the surface utterances of language are always in thrall to the deeper, generative structures at the base of all language.

Does any of this establish that the Sapir-Whorf Hypothesis is untenable? For that matter, do any of the proofs that appear to contribute to the validity of the hypothesis establish it as tenable? It was noted at the outset of this paper that much of the Whorfian notion defies experimental design, and therefore validation by experiment (Price-Williams, 1966). Condon and Yousef (1975) also comment that the "hypothesis" is not one that lends itself to being proven or disproven, and remark that "for some, this is sufficient reason to ignore it as an unscientific proposition" (p. 172). The authors note that in spite of its unscientific character and the scientific and academic controversy surrounding it, the Sapir-Whorf

"Hypothesis" doggedly refuses to go away. The tenacity of a theory, however, does not establish its validity.

Condon and Yousef acknowledge this dilemma when they decide to "ignore what Sapir and Whorf meant," and attempt to restate the proposition in more general terms (1975, p. 172). The tenacity which adheres to the original "hypothesis" suggests that it does contain the germ of an idea about how language might possibly influence—but not shape—the contents and organization of experience at any given time, and how this in turn then acts to influence the shape of a given verbal expression at a given time.

This leads inevitably to the question: If we deal with this so-called "hypothesis" only in terms of first redefining it, 1) are we even working within the framework of the original proposition; and 2) do we even have a hypothesis to begin with? The answer to both, as demanded by logic, is a categorical "No." Hypothesis-building requires a rigorously thought out body of propositions in the scientific sense, in order to establish through experiment that a thing or condition is or is not a fact. Since we are faced with a non-hypothesis, all questions pertaining to the conditions set in the original formulations by Sapir and Whorf, as well as by studies conducted in accordance to those formulations, dissolve and cease to be problems. The Sapir-Whorf "Hypothesis" for that matter vanishes, and a new hypothesis is required to account for the empirical data that, as a result of the "non-hypothesis," has been generated by the various studies and experiments on the relationship between language and reality.[5] The outlines of such a hypothesis await further empirical research and theory-building. Perhaps fruitful results will grow out of observations and speculations related to avenues explored by Piaget, Chomsky, or various other researchers working in the areas of psycholinguistic or neurolinguistic science.

In view of the non-status of the Sapir-Whorf "Hypothesis," what then becomes of the question originally posed at the beginning of this paper, which concerned the effects on intercultural communication of the conditions described by the hypothesis?

The Cultural and Intercultural Context

The dissolution of the Sapir-Whorf "Hypothesis" does not invalidate the results of experiments designed to test the hypothesis. It merely places them in a different perspective where they require reassessment. It also shifts questions that seek to analyze the relation between language, perception, and human behavior into a more appropriate perspective.

We cannot, for instance, deny the results of Whorf's and Hoijer's respective studies of Hopi and Navaho (*supra* pp. 5-7), but the shift in perspective resulting from the dissolution of the original hypothesis forces us to consider factors that do not enter into the framework of "linguistic structures." A basic problem with the Sapir-Whorf standpoint was its very categorical limitation in considering cognitive perception as primarily a verbally-based phenomenon which was not necessarily connected to anything that might be happening in the language-user's overall environment. Such a view is quite static in that it overlooks process, the very real condition that numerous environmental factors exert influence upon any one given phenomenon.

In fairness, the Sapir-Whorf formulation inherited this weakness from Structural linguistics, which is philosophically biased towards scientific materialism of a narrow, exclusively empirical (even deterministic) nature that is interested in defining the world in terms of one-to-one, cause-and-effect relationships. From this Newtonian scientific point-of-view, anything which is not directly observable must be excluded from the scientific scheme of things. As a result, the world can be discussed only in terms of mutually exclusive categories. In terms of Structural Linguistics, this viewpoint means that out-and-out process rules were considered unacceptable in the "usual framework" of structuralism (Pearson, 1977, p. 119). It is not surprising, therefore, that a structuralist approach to the relation between language and perception—and by extension, culture—should be deficient. By attaching greater importance to surface appearances, a Structuralist approach could never accommodate factors that were not immediately observed, measured, and cataloged into a paradigm.

A structural approach could, for example, never account for the facts revealed by Piaget (1970). The entire hypothesis-building framework of the former ignores semiotic functions as significant factors in cognition, and ultimately in communication. This latter factor is attested to in studies by Doi (1973), who to some extent reverses the importance placed on verbal activity when he remarks, "One could say...that for Japanese verbal communication is something that accompanies non-verbal communication and not the other way around" (pp. 180-185). Even Sapir (1949), if somewhat indirectly, recognized the basic problem with his own "hypothesis" when he wrote:

> It is impossible to say what an individual is doing unless we have tacitly accepted the essentially arbitrary modes of interpretation that social tradition is constantly suggesting to us from the very

> moment of our birth. Let anyone who doubts this try the experiment of making a painstaking report (i.e. an etic one) of the actions of a group of natives engaged in some activity, say religious, to which he has not the cultural key (i.e. a knowledge of the emic system). If he is a skillful writer, he may succeed in giving a picturesque account of what he sees, or thinks he sees and hears, but the chances of his being able to give a relation of what happens, in terms that would be intelligible and acceptable to the natives themselves, are practically nil. He will find interesting what the natives take for granted as a casual kind of behavior worthy of no particular comment, and he will utterly fail to observe the crucial turning points in the course of action that give formal significance to the whole in the minds of those who do possess the key to its understanding. (pp. 546-547)

In other words, this hypothetical observer's emphasis will constantly be askew because he cannot look below the surface structure, and he will inevitably distort everything he sees. What Sapir is calling for, in the study that the above quotation is excerpted from, is an effort to understand the structure of different cultures through the key of their languages; curiously, as a formal investigation, such a search for understanding would stand quite outside any of the propositions advanced by his successors as representing some of the main features embraced by the Sapir-Whorf non-hypothesis. This is confirmed by a related study done by Pike on the "meaning" structure of human behavior in relation to language (1954). In this massive study, Pike attempts to apply the "etic" and "emic" approach of Structural Linguistics to human behavior, and describes to exhaustion such activities as a suburban American pool-side cocktail party. Language and non-verbal behavior are viewed as separate and distinct categories that touch, it would seem, only by mere happenstance.

It is interesting that Sapir recognized the significance of non-verbal behavior in defining the context in which speech occurs. The unfortunate assumption that both must be viewed as separate phenomena for the purposes of empirical study, rather than as complementary aspects of the same communicative phenomenon, can perhaps be attributed to a time when the philosophical and scientific atmosphere in the United States of America demanded mechanistic treatment even of dynamic systems.[4] As it stands, the artificial emphasis of the one over the other in their respective studies makes them limited in terms of their utility in describing what is going on in culture. For all the detail that Sapir,

Whorf, Pike and others in their school compiled about language and culture, they only succeeded in suggesting what the relationship was between them, rather than understanding it.

Aspects of Intercultural Communication

It should be clear from the foregoing discussion that whatever effect language has on behavior and, therefore, upon culture, it can only be analyzed in relation to a number of other factors which are non-verbal as well as psychological. These factors enter one's language as much as anything to do with verbal performance insofar as they affect one's ability to achieve communication, especially with someone from a culture other than one's own.

An example of the psychological factors that can influence an individual's ability to communicate interculturally is found in Earl Stevick's *Memory, Meaning, and Method*:

> The fluency requirement...(in speaking a foreign language)... may threaten a self-image ... Obviously, other things being equal, a person who sees him- or herself as the "strong silent type" will resist verbal interaction more than someone with an "out-going, gregarious" self-concept. More important, though less obvious, is the fact that many other threats to a student's ego may result in a withdrawing type of defense mechanism. "I usually succeed at what I try" is threatened by failures small or large; theoretically at least, "I'm no good at languages" might feel temporarily threatened by success. "I'm a professional preparing for an important job" is threatened by materials that seem irrelevant, and "I'm eye-minded" by the with-holding of written materials; "I'm a student, and students are supposed to be taught"[5] reacts badly either to a poor teacher or to a good one who is less directive than expected ... Any of these threats to a student's ego will produce some kind of adaptive reaction, many of which are of a defensive nature. Some ... are aggressive, while others consist of some form of withdrawal, and the latter generally bring partial (or occasionally complete) loss of fluency (1976, pp. 61-62).

Stevick also stresses that the attitude which students have toward the culture that speaks the second language (L2) they are learning will have a great influence on their acquisition of the L2, as well as the fact that peer group pressures can either inhibit or encourage L2 learning (1976, pp. 47-85).[6]

What does this mean in terms of intercultural communication? It would seem that anything which affects language learning should also affect what one is able to learn about another culture. In the case of the examples provided by Stevick, most certainly these individuals would experience some difficulties communicating interculturally for reasons not involved with just verbal language.

As Franz Boas observed[7], an understanding of any culture is predicated upon learning the language of that culture, and the more facile a grasp one has of a given language, the greater the understanding one is likely to have of the culture associated with that language. Moreover, it is not enough merely to learn the structural (that is, surface) features of a language to understand it; one must also acquire some sense of the psychological reality in which the language is spoken if one is to begin to understand something of the essence of both the language and the culture. Doi touches upon a similar theme when he observes that Americans avoid silence because they hate it, whereas Japanese seek silence because they value it—and members of each culture do so because they have been conditioned by their respective cultures to identify with these differing values (Doi, 1973). Unless one gains awareness of the non-linguistic factors which exert so strong an influence upon language and intercultural communication, one has little hope of understanding people of other cultures.

Conclusion

This paper began by asking a general question about the effect that language has on intercultural communication in terms of the so-called Sapir-Whorf "hypothesis." Some basic features of this "hypothesis" were set in a historical perspective and contrasted with other studies that were conducted from antithetical scientific and philosophical viewpoints, and the overall integrity of the "hypothesis" was breached. From the hypothetical standpoint, the Sapir-Whorf Hypothesis does not exist, and any attempt to invoke its authority is tantamount to water-witching or necromancy. The answer to the initial question is that nothing central to the non-hypothesis influences intercultural communication. Logic requires this conclusion.

Yet the idea that the non-hypothesis hints at remains, that something basic to the way human beings interpret reality powerfully, ultimately, influences if not shapes our perception of the world, and by extension, of other cultures. Earlier in this paper it was noted by Chomsky (1972) that the proposition of a UG may be valid only as a first approximation

of how perceptual categories are organized to form the foundations of language. The experimental results of studies inspired by the Sapir-Whorf formulation seem to indicate that it, indeed, may have been a "first approximation" to the views espoused by Chomsky and Piaget. The results of the studies inspired by Sapir and Whorf appear—at least in terms of uninterpreted data—to be consistent on the biological level with the views suggested by Chomsky and Piaget, that some basic mechanism of a pre-linguistic nature in the human make-up molds the human perception of reality.

In any case, structure and dynamism are complementary aspects of a whole. They interact with and interpenetrate each other, just as do language and culture. As Condon and Yousef note, "... language participates in our perception and in our expression of that perception; we cannot divorce language from perception or thought ..." (1975, p. 181).

Language does influence us to emphasize certain distinctions and to minimize others. It is a tool which we use to describe, and therefore shape, the world in which we live. But the tool limits us only to the degree that we allow ourselves to not see that we can fashion our own tool at will, modifying it by examples set through the analysis of other languages. If we can see and accommodate it, and incorporate the new data into the structure of our own dynamic world view, then we, and our way of seeing the world, are changed forever. This does not happen because of the structure of the language we happen to speak; it happens through conscious, objective awareness of ourselves in a world inhabited by others, as well as through a willingness to accept a plurality of differences between speakers of languages other than our own.

This, finally, brings us back to that "oblique metaphor" proposed at the very beginning of this paper—that is, the introduction to a new way of seeing the world, be it the entry into a new culture or the acquisition of another language. The person who attempts either is very much the same as the experimental subject who dons the inverting lenses: for some time the entire world appears to be upside-down, but then it changes. Once the subject has adapted to the new conditions, everything seems right-side up again. The entirely direct implication is that, given time, patience, and an effort to understand, any initially confusing cultural situation will be resolved. Language is not perception, but merely a reflection of perception.

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Notes

1. The original experiments on inverted vision were by George M. Stratton, "Vision Without Inversion of the Retinal Image," *Psychological Review* (1897), pp. 341-360, 463-481.

2. Piaget (1970) discusses the relationships between mental operations, structures, and the "mother structures" of the Bourbaki mathematicians (structures that are isomorphic among all the various branches of mathematics), those structures being *Algebraic* (notion of group), *Order* (relationship), and *Topological* (areas, borders, approaching limits), and the appearance of same in pre-linguistic children.

3. See Ludwig Wittgenstein, *Philosophical investigations* (New York: Oxford University Press, 1953). The principles developed by Wittgenstein in this investigation are of a "therapeutic" nature—that is, they are designed to get scientific and philosophical problems out of bottle-necks by diagnosing when a "problem" is really a "*non*-problem." The so-called Sapir-Whorf "Hypothesis" is such a bottle-neck. Its "non-problem" status should be clear strictly on the basis that in order to deal with, researchers first have to redefine it.

4. See Thomas S. Kuhn, *The structure of scientific revolutions*. A significant portion of this important work addresses the problems involved in the scientific view of static (or mechanistic) and dynamic (or process) views of natural phenomena. The mechanistic view, Kuhn notes, seemed to be a domain inhabited primarily by American scientists and would-be scientists of all fields of enquiry.

5. In this context, the sentence "I'm no good at languages" metaphorically refers to A, who *thinks he is no good at learning languages*. In the same way *I'm no good at languages; I'm a professional ...; I'm eye-minded;* and *I'm a student ...* can be likened to students B, C, and D.

6. Stevick (1976) cites a broad spectrum of psychological studies to validate his observations.

7. c.f. the reference marked by Pearson.

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